

REV10

**ACAT III/IV
SAMPLE RISK MANAGEMENT PLAN**

Preface

DoDD 5000.1 requires that “PMs and other acquisition managers shall continually assess program risks” and that they “shall develop a contracting approach appropriate to the type of system being acquired.” Further, DoD 5000.2-R states that “The PM shall establish a risk management program.....to identify and control performance, cost, and schedule risks.” Although risk, risk management program, and risk management process are addressed throughout this regulation, there is no requirement for a formal Risk Management Plan (RMP). However, Program Managers (PMs) have found such a plan necessary to help formulate and implement a comprehensive and proactive risk management process as an integral part of their overall program management approach. Attached is a sample RMP that is a compilation of several good risk plans previously developed by ACAT III and IV programs. The attachment, also where appropriate, incorporates the results of the DoD Risk Management Working Group study. It represents the types of information and considerations that a plan, tailored to a specific program, might contain. The Table of Contents serves as a recommended outline for the plan. The DoD Acquisition Deskbook, Section 252, has general guidance and advice in all areas of risk management. Section 2524 of the Deskbook contains information concerning the development of a risk management plan.

There is a danger in providing a sample document. First of all, because it is written as a guide for a general audience, it may not satisfy all the needs of any particular program. Second, there is the possibility that some prospective user will simply adopt the plan as written, despite the fact that it does not fit his or her program. The reason for providing this example is to give PMs and their staffs a starting point for their own planning process. The key to using the sample plan is to keep things simple and tailor the plan to suit your needs, focusing on the management of risk in the key critical areas of your program.

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SAMPLE RISK MANAGEMENT PLAN FOR THE *ABC* PROGRAM

1.0 INTRODUCTION.

1.1 Purpose and Objective. This Risk Management Plan (RMP) presents the process for implementing the comprehensive and proactive management of risk as part of the overall management of the *ABC* Program. Risk management is a program management tool to handle events that might adversely impact the program, thereby increasing the likelihood of success. This RMP describes a management tool that will:

- Serve as a basis for identifying alternatives to achieve cost, schedule, and performance goals,
- Assist in making decisions on budget and funding priorities,
- Provide risk information for Milestone decisions, and
- Allow monitoring the health of the program as it proceeds.

This RMP describes methods for assessing (identifying and analyzing), prioritizing, and monitoring risk drivers; developing risk-handling approaches, and applying adequate resources to handle risk. It assigns specific responsibilities for these functions, and prescribes the documenting, monitoring, and reporting processes to be followed.

If necessary, this RMP will be updated on the following occasions: (1) whenever the acquisition strategy changes, or there is a major change in program emphasis; (2) in preparation for major decision points; (3) in preparation for, and immediately following, technical audits and reviews; (4) concurrent with the review and update of other program plans; (5) in preparation for a POM submission; (6) after a significant unplanned technical event (such as a critical material substitution or a catastrophic test failure); and (7) after any kind of funding turbulence (such as a “tax”, or a less-than-budgeted apportionment, or the identification of a substantial cost growth).

2.0 PROGRAM SUMMARY.

2.1 Description. The *ABC* Program is an ACAT III level program that was initiated in response to the *NEW COM* Operational Requirements Document (ORD) XXX, dated DD-MM-YYYY. The program will provide an *ABC* communications system that will be the common system (transmitter/receiver/controller) for all DoD components for UHF satellite communications. All DoD systems requiring UHF satellite communications procured subsequent to Initial Operational Capability (IOC) of the *ABC* system will incorporate it to meet their needs. The Bx Unmanned Air Vehicle is the lead system for integration. The program has completed the Program Definition and Risk Reduction phase and is preparing for a Milestone II decision.

The system will be acquired using off-the-shelf UHF satellite communications systems. During Phase I of the program, two contractors delivered prototypes of their systems. One is a ruggedized commercial product and the other is built to military specifications.

The Government tested both systems against functional and performance requirements and some environmental extremes. Although, each failed portions of the tests, both systems were evaluated to be mature enough to represent an acceptable risk for proceeding to Phase II of the program, Engineering and Manufacturing Development.

2.2 Acquisition Strategy. The Government will invite the contractors that participated in Phase I of the program to submit proposals to refine their approaches into a stable, interoperable, producible, supportable, and cost-effective design; validate the manufacturing or production process; and demonstrate system capabilities through testing. The Government will select one of the two proposals for Phase II of the program. The contractor, upon demonstration of exit criteria (See Annex A), will proceed with a Low Rate Initial Production (LRIP) of the system.

The IOC (20 systems) for the *ABC* system is required by FY-02 to support the fielding of the Bx UAV. Production capacity for the *ABC* system at IOC is expected to be 20 units per month to meet the demand of new systems.

2.3 Program Management Approach. The *ABC* Program Manager (PM) reports to the Program Director, Satellite Communications who has responsibility for all satellite communications systems. The *ABC* Program Office (PO) is composed of the PM and one assistant, with matrix support from the systems command organizations, and program management support from an external contractor. An integrated management approach will be used for this program. The government and selected contractor will have representation on Integrated Product Teams (IPTs) that will focus on cost, design, test, manufacturing, and support of the system. The PM chairs the government IPT that develops strategies for acquisition and contracts.

3.0 RISK-RELATED DEFINITIONS. The Defense Acquisition Deskbook (DAD) section 2521 contains the definitions for risk, risk management, risk events, and the terms associated with risk management that will be used by the *ABC* PO. Variation and clarification of definitions that appear in the DAD as they are used in the *ABC* program are described below.

3.1 Technical Risk. This is the risk associated with the evolution of the design, production, and supportability of the *ABC* system affecting the level of performance necessary to meet the operational requirements. The contractor and subcontractors' design, test, and production processes (process risk) influence the technical risk and the nature of the product as depicted in the various levels of the Work Breakdown Structure (product risk). Process risks are assessed in terms of process variance from known best practices and potential consequences of the variance. Product risks are assessed in terms of technical performance measures and observed variances from established profiles.

3.2 Cost Risk. The risk associated with the ability of the program to achieve its life-cycle cost objectives. Two risk areas bearing on cost are: the risk that the cost estimates

and objectives are accurate and reasonable; and the risk that program execution will not meet the cost objectives as a result of a failure to mitigate technical risks.

3.3 Schedule Risk. The risk associated with the adequacy of the time estimated and allocated for the development, production, and fielding of the system. Two risk areas bearing on schedule risk are: the risk that the schedule estimates and objectives are realistic and reasonable; and the risk that program execution will fall short of the schedule objectives as a result of failure to mitigate technical risks.

3.4 Risk Ratings. This is the value that is given to a risk event (or the program overall) based on the analysis of the likelihood/probability and consequences of the event. For the *ABC* Program, risk ratings of LOW, MODERATE, or HIGH will be assigned based on established criteria. Section 6.2 gives guidance on determining likelihood and consequences and defines the criteria.

4.0 RISK MANAGEMENT STATUS AND STRATEGY

4.1 Risk Management Status.

As a result of the Program Definition and Risk Reduction Phase, the overall risk of the *ABC* Program for Milestone II is assessed as moderate, but acceptable. Moderate risk functional areas are environmental requirements, form fit and function, integration, manufacturing, and cost.

4.2 Risk Management Strategy.

The *ABC* Program risk management strategy is to handle program risks, both technical and non-technical, before they become problems and cause serious cost, schedule, or performance impacts. This strategy influences the Acquisition Strategy and the program management approach, and will be executed primarily through the Government-Contractor WIPT organization. The WIPTs will continuously and proactively assess critical areas (especially those listed in the previous paragraph) to identify and analyze specific risks, and will develop options to mitigate all risks designated as moderate and high. The WIPTs will also identify the resources required to implement the developed risk-handling options. The PM, through the IIPT, will review and approve the WIPT options. Once approved, the options will be incorporated into the program integrated master plan (IMP) and integrated master schedule (IMS). The WIPTs will monitor the effectiveness of the selected handling options, and adjust the risk handling approach as necessary.

IPTs will keep risk information current by using the risk management information system described in paragraph 6.5. Risk status will be reported at all program reviews. As new information becomes available, the PO and contractor will conduct additional reviews to ascertain if new risks exist. The goal is to be continuously looking to the future for areas that may severely impact the program.

5.0 RISK MANAGEMENT ORGANIZATION.

5.1 Program Office. The *ABC* Program risk management organization is shown in Figure 5-1. This structure is integrated into the contractor and Government's existing organizations. Working-Level Integrated Product Teams (WIPTs) will be formed for the functional areas that are critical to the success of the program. All functional areas not covered by a WIPT will be assessed and reviewed by the program Integrating Integrated Product Team (IIPT), co-chaired by the *ABC* PM and contractor PM, to ensure adequate vigilance against emerging risk areas. Independent risk assessors may conduct reviews, when directed by the PM, to ensure the interface requirements of the user systems is being met by the *ABC* system design.

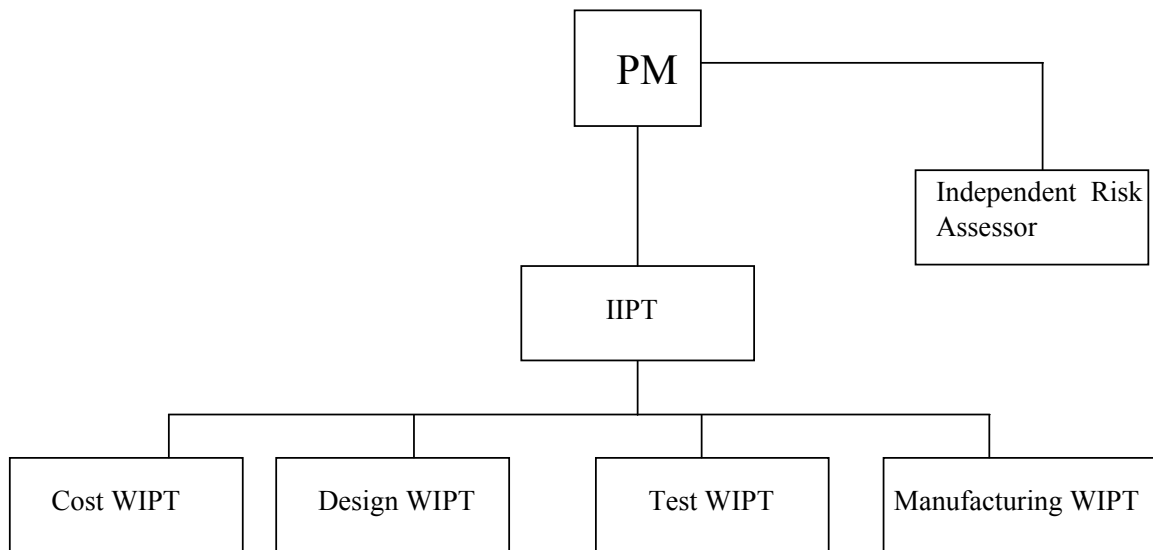


Figure 5-1 ABC Risk Management Organization

5.2 Responsibilities.

Risk Management Coordinator. The PM the is overall coordinator of the Risk Management Program and is responsible for:

- Maintaining this Risk Management Plan
- Maintaining the Risk Management Data Base
- Approving risk-handling options
- Incorporating risk-handling actions into the program master plan and schedule
- Tracking efforts to reduce risk to acceptable levels
- Briefing the decision makers on the status of *ABC* Program risk efforts
- Preparing risk briefings, reports, and documents required for Program Reviews and the acquisition Milestone decision processes.

IIPT. The IIPT is responsible for complying with the DoD risk management policy, for structuring an efficient and useful *ABC* risk management approach and supporting the Risk Management Coordinator/PM in carrying out his responsibilities. The PM and contractor PM Co-Chair the IIPT. The IIPT membership may be adjusted, but is initially

established as the chairs of the WIPTs, a representative from the joint requirements and users' office, and a representative from the contractor.

WIPTs. The program WIPTs are the backbone of the program risk management effort. They will execute the following responsibilities relative to their functional areas:

- Conduct risk assessments and develop risk-handling options, to include mitigation plans and resources required.
- Monitor effectiveness of risk-handling actions.
- Review and recommend to the PM changes in the overall risk management approach based on lessons learned.
- Quarterly, or as directed, update the risk assessments.
- Ensure information in the Risk Management Database is current.
- Prepare risk status reports in their areas for all Program and Design Reviews.
- Ensure Design/Build Team responsibilities incorporate appropriate risk management tasks.
- Coordinate WIPT risk management activities with the IIPT.

6.0 RISK MANAGEMENT STRUCTURE AND PROCEDURES. The *ABC* Program will use a structured risk management approach consisting of four elements; planning, assessment, handling, and monitoring. These elements and the general procedures to be used for each of them are described in subsequent paragraphs of this section. There are a number of guidance documents that are useful in addressing these risk management elements, and should be used as appropriate by each WIPT. Some of these documents are listed below. (This list is not meant to be exhaustive.)

- Defense Acquisition Deskbook-Section 2.5.2, Risk Management
- DSMC , *Risk Management Guide*, March 1998
- AFMC Pamphlet 63-101, *Risk Management*, 9 July 1997
- The Navy's Best Practices Manual, NAVSO P-6071, provides insight into best practices.

<i>This section could be more directive to the WIPTs by identifying the specific guidance documents and other tools to be used in the program.</i>
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6.1 Risk Planning. Risk planning is essential for the execution of a successful risk management program. It will be done continuously by all WIPTs as an integral part of normal *ABC* program management. This RMP serves as the basis for all detailed risk planning, which must be continuous. The following paragraphs provide direction for the WIPTs on the conduct of risk planning for this program.

- WIPTs will develop an organized and thorough approach to assess, handle, and monitor risks. It will assign responsibilities for specific risk management actions and establish internal risk reporting and documentation requirements. The IIPT will monitor the planning activities of the WIPTs to ensure that they are consistent with this RMP and that appropriate revisions to this plan are made when required to reflect significant changes resulting from the WIPT planning efforts.

- Each WIPT will establish metrics that will measure the effectiveness of their planned risk-handling options. See Annex C for an example of metrics that may be used.
- Each WIPT will identify the resources required to implement the risk management actions. These resources include time, material, personnel, and cost. Training is major consideration. All WIPT members should receive instruction on the fundamentals of risk management and special training in their area of responsibility, if necessary. General risk management training will be arranged by the PO; WIPT leaders will identify any specialized training needs.

This RMP establishes the basic documentation and reporting requirements for the program. WIPTs should identify any additional requirements, consistent with this RMP that might be needed to effectively manage risk at their level.

6.2 Risk Assessment. The risk assessment process includes the identification of critical risk events/processes, the analyses of these events/processes to determine the likelihood of occurrence/process variance and consequences and the priority of the risks. The output of this process provides the foundation for all the program risk handling actions. Therefore, it is essential that all members of the *ABC* program team be as thorough as possible in identifying and analyzing risks. In addition to the normal areas of design, test, manufacturing, etc., WIPTs must identify and analyze the risks associated with such areas as manpower, environmental impact, system safety and health analysis, and security considerations. The Defense Acquisition Deskbook, Section 2524, provides information on various risk assessment techniques.

Risk assessments should be done by the WIPTs and the IIPT with active participation of both Government and contractor personnel. When necessary or appropriate, the WIPTs and the IIPT can direct a contractor-only assessment, or conduct a Government assessment. WIPTs and the IIPT should continually assess the risks in their areas, reviewing critical risk areas, risk ratings and prioritization, and the effectiveness of risk-mitigation actions whenever necessary to assess progress. The assessment process will be iterative, with each assessment building on the results of previous assessments. WIPTs and the IIPT will use the current assessment baseline as the starting point for their initial assessment during this phase. This baseline is a combination of the risk assessment delivered by the contractors as part of Phase 0, the PMO process risk assessment done before Milestone I, and the post award Integrated Baseline Review (IBR).

Risk assessments will be updated and the results presented at all functional and program reviews, with a final update for this phase prepared not later than six months prior to the next scheduled Milestone decision.

The following paragraphs describe the process to be followed in assessing risks.

Risk Identification. Each WIPT will review all aspects of their functional areas to determine the critical events that would prevent the program from achieving its objectives. They should apply the knowledge, best judgment and experience of the WIPT members, lessons learned from similar programs, and the opinion of subject matter experts (SMEs) to identify these risk events. WIPTs should follow the following general procedures as a guide in identifying risk events:

- Understand the requirements and the program performance goals, which are defined as thresholds and objectives (see DoD 5000.2-R). Understand the operational (functional and environmental) conditions under which the values must be achieved as described in the Design Reference Mission Profile. The ORD and Acquisition Program Baseline (APB) contain Key Performance Parameters (KPPs).
- Determine technical/performance risks related to engineering and manufacturing processes. Identify those processes that are planned or needed to design, develop, produce, and support the system. Compare these processes with industry best practices and identify any variances or new, untried processes. These variances or untried practices are sources of risk. The contractor should review the processes to be used by its subcontractors to ensure they are consistent with best industry practices. Table 4-2 of the DSMC Risk Management Guide shows some of the specific sources of process risk, and should be used by the WIPTs. NAVSO P-6071, *Best Practices*, which describes risks associated with design, test, production, facilities, logistics, management, and funding, should also be used by the WIPTs to identify risks.
- Determine technical/performance risks associated with the product (the *ABC* communications system) in the following critical risk areas: design and engineering, technology, logistics, concurrency, and manufacturing. The design and manufacturing WIPTs will identify the contract WBS elements down to level 3, and evaluate each of these elements to identify risk events. They will use a variety of methods to accomplish this; review of similar programs, existing program plans, expert opinion, etc.
- Identify schedule risk. Each WIPT will determine the schedule risk associated with its functional area. When identifying this schedule risk, they will consider the risk that the schedule estimate is accurate, and the risk that the established schedule can be met. The WIPT will monitor the development of the schedule risk in each WIPT, and consolidate these risks to identify overall program schedule risk.
- Identify cost risk. Each WIPT will determine the cost risk associated with its functional area. They will identify risks associated with the accuracy of the cost estimates developed for their areas, and the risk that the established cost objectives will be met. The Cost WIPT will monitor the development of the other WIPT cost risk efforts, and consolidate their risks into a set of overall program cost risks.
- All identified risks will be documented in the RMIS, with a statement of the risk and a description of the conditions or situations causing concern and the context of the risk. See Paragraph 6.4 for guidance on documenting identified risks.

In identifying risks, WIPTs should be particularly alert for the following indicators. They are common sources of risk for all programs, and will be applicable to the *ABC* program.

- Requirements that are not clearly stated or stable
- Failure to Use Best Practices
- Use of new processes materials, or applications of existing technologies
- Use of processes lacking rigor in terms of maturity, documentation of established procedures, and validation
- Insufficient resources--the people, funds, schedule, and tools, necessary for successful development, test, production and support of the *ABC* program.
- Lack of a formalized failure, reporting, analyze, and corrective action (FRACAS) system.
- Use of suppliers or subcontractors who are inexperienced in the processes for designing and producing required products.
- Failure of prime contractor to effectively monitor processes and establish quality requirements for suppliers and subcontractors.

Risk analysis is an evaluation of the identified risk events to determine the likelihood of the events occurring and their consequences, to assign a risk rating based on the program criteria, and to prioritize the risks. Each WIPT and the IIPT are responsible for analyzing those risk events they identify. They may use subject matter experts for assistance, such as Field Activities, Service Laboratories, contractors, or outside consultants. The use of external assets will be coordinated through the PMO. The results of the analysis of all identified risks must be documented in the RMIS.

There are a number of techniques available to support risk analysis, to include studies, test results, modeling and simulation, and the opinions of qualified experts (to include justification of their judgment). The DAD, Section 2524.2 describes a number of analysis techniques that may be useful. Regardless of the technique used, WIPTs and the IIPT will identify all assumptions made in analyzing risk and, where appropriate, conduct a sensitivity analysis of assumptions.

For each risk event, the following risk analysis guidelines will be used:

- **Likelihood/Probability.** For each risk identified, determine the likelihood that the event will occur. Five levels of likelihood will be used for the *ABC* program. Table 6-1 shows these levels and their definitions. WIPTs and the IIPT will assign one of these values to each identified risk event based on their analysis of the event. For example, if it is known that there will be a variance between the soldering process to be used for component *X* and the industry standard, this process variance risk event will be assigned a likelihood value of "e"--near certainty. Similarly, if the Manufacturing WIPT determines that the schedule estimate for the fabrication of component *Y* is overly optimistic, and will probably not be attained, it would assign a likelihood level of "c" or "d" depending on its analysis of the schedule estimate.

Table 6-1. Likelihood Levels

Level	Likelihood of Occurrence
a	Remote
b	Unlikely
c	Likely
d	Highly Likely
e	Near Certainty

- **Consequence.** For each risk identified, the following question must be answered: *Given the event occurs, what is the magnitude of the consequence?* For the *ABC* program, consequence will be determined in each of four areas: technical performance, schedule, cost, and impact on other teams.

Technical Performance: This category relates to the risks associated with the processes to be used in the development, testing, and manufacturing of the *ABC* system, and the nature of the *ABC* communications system. It includes the form, fit, function, manufacturability, supportability, etc. Essentially, technical risk includes all requirements that are not part of cost and schedule. The wording of each consequence level is oriented toward design and production processes, life cycle support, and retirement of the system. For example, the word “margin” could apply to weight margin during design, safety margin during testing, or machine performance margin during production.

Schedule: The description in the Schedule is self-explanatory. The need dates, key milestones, critical path, and key team milestones are meant to apply to all program areas and WIPTs.

Cost: Since costs vary from component to component and process to process, the percentage criteria shown in the figure may not strictly apply at the lower levels of the WBS. WIPT and IIPT leaders may set the percentage criteria that best reflect their situation. However, when costs are rolled up at higher levels (e.g., Program), the definitions shown will be used.

Impact on Other Teams: Both the consequences of a risk and the mitigation actions associated with handling the risk may impact another team. This may involve additional coordination or management attention (resources), and may therefore increase the level of risk. This is especially true of mitigation actions that involve the use of common manufacturing processes and/or equipment.

WIPTs and the IIPT will evaluate each risk event in terms of these areas, and assign a level of consequence (1-5). Table 6-2 shows these 5 levels of consequence, and defines the levels for each area. This table will be used when assigning the consequence magnitude.

Table 6-2. Risk Consequence

Level	Technical Performance	Schedule	Cost	Impact on Other Teams
1	Minimal or no impact	Minimal or no impact	Minimal or no impact	None
2	Acceptable with some reduction in margin	Additional resources required. Able to meet need dates	<5%	Some impact
3	Acceptable with significant reduction in margin	Minor slip in key milestone. Not able to meet need dates	5-7%	Moderate impact
4	Acceptable-no remaining margin	Major slip in key milestone or critical path impacted	>7<10%	Major impact
5	Unacceptable	Can't achieve key team or major program milestone	>10%	Unacceptable

Risk Rating. Each identified risk will be assigned a risk rating based on the joint consideration of event likelihood and consequence. This rating is a reflection of the severity of the risk and provides a starting point for the development of options to handle the risk. It is important to consider both the likelihood and consequences in establishing the rating, for there may be risk events that have a low likelihood, but whose consequences are so severe that the occurrence of the event would be disastrous to the program.

Figure 6-1 describes the risk rating process that will be used in this program. WIPTS and the IIPT will analyze each risk event to determine the likelihood and consequence values using the definitions in Tables 6-1 and 6-2; they will determine the consequence for each of the four areas (technical performance, schedule, cost, and team impact). The values will be used to determine the risk rating using the Assessment Guide in Figure 6-1. The Assessment Guide defines the risk rating associated with each combination of likelihood and consequence values, and will be used throughout the program. For example, consequence /likelihood level 2b corresponds to a risk rating of G (green) LOW, level 3d corresponds to MODERATE risk, and level 4c corresponds to HIGH risk.

Those risk events that are assessed as MODERATE or HIGH will be submitted to the ABC PM on a Risk Identification Form (RIF). See Appendix B for the RIF format. WIPTs and the IIPT must actively manage these MODERATE and HIGH risks. They must also continuously assess the other identified risks in their areas to see if their ratings have become MODERATE or HIGH.

Risk Prioritization. WIPTs and the IIPT will prioritize the MODERATE and HIGH risks in their areas. This prioritization will provide the basis for the development of risk handling plans and the allocation of risk management resources. Prioritization will be accomplished using expert opinion within the WIPTs, and will be based on the following criteria:

- Risk Rating--Obviously HIGH-MODERATE.
- Consequence--Within each rating, the highest value of consequence, e.g., 5.

- Urgency--How much time is available before risk handling actions must be initiated.
- Likelihood--Within each rating, the highest value, e.g., "e."

The IIPT will review the prioritized list of WIPT-developed risks, and integrate them into a single list of prioritized program risks, using the same criteria.

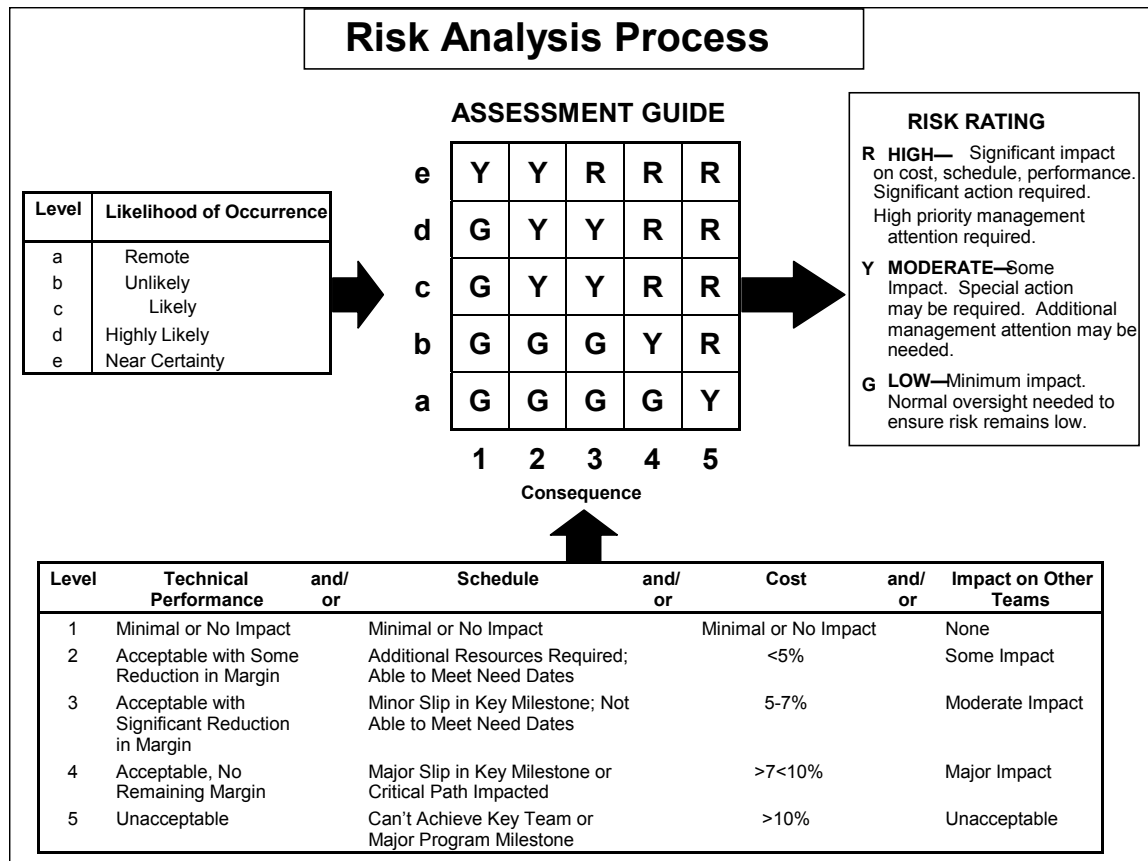


Figure 6-1. Risk Assessment Process

6.3 Risk Handling. After the program's risks have been identified, analyzed, and prioritized, WIPTs and the IIPT must develop an approach for handling each MODERATE and HIGH risk. For all such risks, the various handling techniques should be evaluated in terms of feasibility, expected effectiveness, cost and schedule implications, and the effect on the system's technical performance, and the most suitable technique selected. The DAD section 2524.3 contains information on the risk-handling techniques and various actions that can be used to implement them. Reducing requirements as a risk avoidance technique will be used only as a last resort, and then only with the participation and approval of the user's representative at the IIPT level.

The results of the evaluation and selection will be included and documented in the RMIS using the RIF. This documentation will include the following elements:

- What must be done

- List of all assumptions
- Level of effort and materials required
- Resources needed that are outside the scope of the contract or official tasking
- Estimated cost to implement the plan
- Proposed schedule showing the proposed start date, the time phasing of significant risk reduction activities, the completion date, and their relationship to significant Program activities/milestones
- Recommended metrics for tracking risk-handling activity
- Other WIPTs, risk areas, or other handling plans which may be impacted
- Person responsible for implementing and tracking the selected option.

Risk handling actions will be integrated into program planning and scheduling, and incorporated into the IMP and IMS. WIPTs and the IIPT will develop these risk-handling actions and events in the context of Work Breakdown Structure (WBS) elements, establishing a linkage between them and specific work packages that makes it easier to determine the impact of actions on cost, schedule, and performance. The detailed information on risk-handling actions and events will be included in the RIF for each identified risk, and thus be resident in the RMIS.

6.4 Risk Monitoring. Risk monitoring is the systematic tracking and evaluation of the progress and effectiveness of risk-handling actions by the comparison of predicted results of planned actions with the results actually achieved to determine status and the need for any change in risk-handling actions. The WIPTs and the IIPT will monitor all identified risks in their areas, with particular attention to those rated as HIGH or MODERATE. There are a number of techniques and tools available for monitoring the effectiveness of risk-handling actions. (See DAD section 2524.4 for information on specific techniques.) WIPTs and the IIPT must select those that best suit their needs. No single technique or tool is capable of providing a complete answer—a combination must be used. At a minimum, each WIPT and the IIPT will use the Risk Tracking Report (RTR) and Watchlist for day-to-day management and monitoring of risks. See Annex B for examples of an RTR and Watchlist. The status of risk handling actions for all MODERATE and HIGH risks will be an agenda item at each program or functional area review.

For each identified risk, the WIPTs and IIPT will establish a management indicator system (metrics) that provides accurate, timely, and relevant risk monitoring information in a clear, easily understood manner. WIPTs and the IIPT should select metrics that portray the true state of the risk events and handling actions. See Annex C for an example of metrics that may be used.

MODERATE or HIGH risks will also be monitored by the ABC PM through the IIPT, using information provided by the appropriate WIPT, until the risk is considered LOW and recommended for “Close Out.” WIPTs and the IIPT will continue to monitor LOW risk events in their areas to ensure that appropriate risk-handling action can be initiated if there are indications that the rating may change.

The status of the risks and the effectiveness of the risk-handling actions will be agenda items for all functional area and program reviews, and will be reported to the PM on the following occasions:

- Quarterly
- When the IPT determines that the status of the risk area has changed significantly (as a minimum when the risk changes from high to moderate to low, or vice versa)
- When requested by the Program Manager.

6.5 Risk Management Information System (RMIS), Documentation, and Reports. The *ABC* Program uses a modified version of Risk Matrix as its RMIS. The Risk Matrix database will contain all of the information necessary to satisfy the program documentation and reporting requirements. This information will include risk assessment documents, risk handling plans, contract deliverables, if appropriate, and any other risk-related reports. The program office will use data from the RMIS to create reports for senior management and for day-to-day management of the program. The program produces a set of standard reports for periodic reporting and has the ability to create ad hoc reports in response to special queries.

Each WIPT and the IIPT are responsible for entering and maintaining accurate risk management data in the RMIS. A standard format Risk Information Form (RIF) Data will be used for data entry. A RIF will be completed and submitted when a potential risk event is identified, and will be updated as information becomes available as the assessment, handling, and monitoring functions are executed. See Annex B for a sample of the RIF. Annex B also contains examples of reports to be used in the *ABC* Program.

Annex A

CRITICAL PROGRAM ATTRIBUTES

Category	Description	Responsible WIPT	Remarks
Performance/Physical	Transmitter Power		
	Weight		
	MTBF		
	Receiver Gain		
	EMP Survivability		
	Heat Dissipation		
	Size		
	Receiver Range		
	Transmitter Range		
	Data Link Operations		
	Interface Commonality		
	Initial Setup		
	Identification Time		
	Accuracy Location		
	Bandwidth		
	Reliability		
	Maintainability		
	Availability		
	Etc.		
Cost	Operating and Support Costs		
	Etc.		
Processes	Requirements Stable		
	Test Plan Approved		
Exit Criteria	Bench Test		
	Accuracy Verified by Test Data and Analysis		
	Toolproofing Completed		
	Logistics Support Reviewed by User		

Annex B

MANAGEMENT INFORMATION SYSTEM AND DOCUMENTATION

1.0 DESCRIPTION

In order to manage risk, we need a database management system that stores and allows retrieval of risk-related data. The Risk Management Information System provides data for creating reports and serves as the repository for all current and historical information related to risk. The PM is responsible for the overall maintenance of the RMIS, and he/she or his/her designee are the only persons who may enter data into the database.

The RMIS has a set of standard reports. If WIPTs or functional managers need additional reports, they should work with the PM to create them. Access to the reporting system will be controlled, however any member of the Government or contractor team may obtain a password to gain access to the information.

In addition to standard reports, the PO will need to create ad hoc reports in response to special queries etc. The PM will be responsible for these reports.

2.0 RISK MANAGEMENT FORMS AND REPORTS

The following are examples of basic reports and forms that are used in the *ABC* PO.

2.1 Risk Information Form

The PO needs a document that serves the dual purpose of a *source* of data entry information and a *report* of basic information for the WIPTs, etc. The Risk Information Form (RIF) serves this purpose. It gives members of the project team, both Government and contractors, a format for reporting risk related information. The RIF will be used when a potential risk event is identified and updated over time as information becomes available and the status changes. As a source of data entry, the RIF allows the database administrator to control entries. The format and information required in a RIF is detailed in the following table.

Element	Description
Risk Identification (ID) Number	Identifies the risk and is a critical element of information, assuming that a relational database will be used by the PO. (Construct the ID number to identify the organization responsible for oversight.)
Risk Event	States the risk event and identifies it with a descriptive name. The statement and risk identification number will always be associated in any report.
Priority	Reflects the importance of this risk priority assigned by the PO compared to all other risks, e.g., a one indicates the highest priority.
Date Submitted	Gives the date that the RIF was submitted.
Major System/Component or Process	Identifies the major system/component based on the Work Breakdown Structure (WBS), or the process in which the risk event occurs.

Subsystem/ Functional Area	Identifies the pertinent subsystem or component based on the WBS.
Category	Identifies the risk as technical/performance cost or schedule or combination of these.
Statement of Risk	Gives a concise statement (one or two sentences) of the risk.
Description of Risk	Briefly describes the risk; lists the key processes that are involved in the design, development, and production of the particular system or subsystem. If technical/performance, include how it is manifested (e.g., design and engineering, manufacturing, etc.
Key parameters	Identifies the key parameter, minimum acceptable value, and goal value, if appropriate. Identifies associated subsystem values required to meet the minimum acceptable value and describes the principal events planned to demonstrate that the minimum value has been met.
Assessment	States if an assessment has been done. Cites the Risk Assessment Report (see next paragraph), if appropriate.
Analysis	Briefly describes the analysis done to assess the risk; includes rationale and basis for results
Process Variance	States the variance of critical technical processes from known standards or best practices, based on definitions in the program's risk management plan.
Probability of Occurrence	States the likelihood of the event occurring, based on definitions in the program's risk-management plan.
Consequence	States the consequence of the event, if it occurs, based on definitions in the program's risk-management plan.
Risk Rating	Identifies the rating assigned to the risk based on the criteria established by the program
Time Sensitivity	Estimates the relative urgency for implement the risk-handling option.
Other Affected Areas	If appropriate, identifies any other subsystem or process that this risk affects.
Risk Handling Plans	Briefly describes plans to mitigate the risk. Refers to any detailed plans that may exist, if appropriate.
Risk Monitoring Activity	Measurement and metrics for tracking progress in implementing risk-handling plans and achieving planned results for risk reduction.
Status	Briefly reports the status of the risk-handling activities and outcomes relevant to any risk-handling milestones.
Status Date	Lists date of the status report.
Assignment	Lists individual assigned responsibility for mitigation activities.
Reported By	Records name and phone number of individual who reported the risk.

2.2 Risk Monitoring Documentation

The PM needs a summary document that tracks the status of HIGH and MODERATE risks. The *ABC* program will use a Risk-Tracking Report (RTR) that contains

information that has been entered from the RIF. An example of the RTR is shown in figure B-1.

The PM and WIPTs must also be aware of upcoming deadlines and events to ensure they are not caught unprepared for a result. A Watchlist will be used to track upcoming events and activities. A sample Watchlist is contained in figure B-2.

RISK TRACKING REPORT (EXAMPLE REPORT)		
Risk Area Status: Design	Likelihood: <u>Hi</u>	Consequence: <u>Hi</u>
Significant Design Risks:		
1. Title: System Weight	Likelihood: <u>Hi</u>	Consequence: <u>Hi</u>
Problem: Exceed system weight by 10%; decreasing the range and increasing fuel consumption.		
Action: Examining sub-systems to determine areas where weight may be reduced. Reviewing the requirement. Closely watching the effect on reliability and interoperability.		
2. Title: Design Analysis	Likelihood: <u>Hi</u>	Consequence: <u>Hi</u>
Problem: Failure Modes, Effects and Criticality Analysis (FMECA) is planned too late to identify and correct any critical single point failure points prior to design freeze.		
Action: Additional resources are being sought to expedite performance of FMECA.		
Risk Area Status: Supportability	Likelihood: <u>Hi</u>	Consequence: <u>Mod/Hi</u>
1. Title: Operational Support	Likelihood: <u>Hi</u>	Consequence: <u>Mod/Hi</u>
Problem: Power supply sub-contractor is in financial trouble and may go out of business. No other known sources exist.		
Action: Doing trade study to see if alternative designs have a broader power supply vendor base. Prime contractor is negotiating with the sub-contractor to buy drawings for development of second source.		

Figure B-1. Example Risk Tracking Report

Watchlist Example

Potential Risk Event	Risk Reduction Actions	Action Code	Due Date	Date Completed	Explanation
•Accurately predicting shock environment equipment will experience.	•Use multiple finite element codes & simplified numerical models for early assessments.	SE03	31 Aug 99		
	•Shock test simple isolated structure, simple isolated deck, and proposed isolated structure to improve confidence in predictions.	SE03	31 Aug 99		
•Evaluating impact of circuit cards that are not similar to previous designs.	•Concentrate on modeling and scale testing of technologies not demonstrated successfully in large-scale tests or full-scale trials.	SE031	31 Apr 99		
	•Factor design and into system requirements. Continue model tests to validate predictions for isolated cards.	SE032	31 Aug 99		

Figure B-2 Sample Watchlist

2.3 WIPT RISK SUMMARY REPORT

In addition to the RTRs for individual HIGH and MODERATE risks, WIPTs will prepare a periodic summary of the ratings for all the risks in their areas. Figure B-3 provides an example of this report. The format for this summary is based on the risk assessment guide shown in Figure 6-1. The entries in each cell of the matrix represent the number of identified risks with the corresponding likelihood and consequence values.

Likelihood	e	0	1	0	1	0
	d	0	0	1	1	2
	c	3	2	1	0	0
	b	4	3	5	2	1
	a	5	3	1	1	2
		1	2	3	4	5
		Consequence				

Figure 6-3. Example WIPT Risk Summary Report

Annex C

EXAMPLES OF PRODUCT-RELATED METRICS

Engineering	Requirements	Production	Support
Key Design Parameters Weight Size Endurance Range Design Maturity Open problem reports Number of engineer-ing change proposals Number of drawings released Failure activities Computer Resource Utilization Etc.	Requirements Traceability Requirements Stability Threat Stability Design Mission Profile	Manufacturing Yields Incoming Material Yields Delinquent Requisitions Unit Production Cost Process Proofing Waste Personnel Stability	Special Tools and Test Equipment Requirements Support Infrastructure Footprint Manpower Estimates

Examples of Process Metrics

Design Requirements	Trade Studies	Design Process	Integrated Test Plan	Failure Reporting System	Manufacturing Plan
Development of requirements traceability plan Development of specification tree Specifications reviewed for: Definition of all use environments Definition of all functional requirements for each mission performed	Users needs prioritized Alternative system configurations selected Test methods selected	Design requirements stability Producibility analysis conducted Design analyzed for: Cost Parts reduction Manufacturability Testability	All developmental tests at system and subsystem level identified Identification of who will do test (Government, contractor, supplier)	Contractor corporate-level management involved in failure reporting and corrective action process Responsibility for analysis and corrective action assigned to specific individual with close-out date	Plan documents methods by which design to be built Plan contains sequence and schedule of events at contractor and sub-contractor that defines use of materials, fabrication flow, test equipment, tools, facilities, and personnel Reflects manufacturing inclusion in design process. Includes identification and assessment of design facilities

Examples of Cost and Schedule Metrics

Cost	Schedule
Cost variance Cost performance index Estimate at completion Management reserve	Schedule variance Schedule performance index Design Schedule Performance Manufacturing Schedule Performance Test Schedule Performance